

**San Francisco-Oakland Bay Bridge  
Seismic Safety Project  
Self Anchored Suspension Span**

**Photos of Model Assembly,  
Tower Leg at Elevation 89**

**January, 2006**

## **Mock-up of Tower Leg at Elevation 89**

Following is a brief description of the assembly of a wood model of a portion of a tower leg of the Bay Bridge. The assembly sequence employed represents a possible means of assembly but does not constitute a contract requirement. The contractor is responsible for developing the means and methods used for such work during performance of the contract and for full compliance with contract requirements.

### **Diaphragm Assembly Sequence (pp. 3-8)**

- Step 1: Assemble walls
- Step 2: Install bottom diaphragm plates
- Step 3: Install diaphragm web plates
- Step 4: Install top diaphragm plates
- Step 5: Assemble tower shaft segment
- Step 6: Completion of top diaphragm (drop-in plates)

### **Strut Installation Sequence: Longitudinal Direction (p. 9)**

- Step 1: Build tower shafts
- Step 2: Install one web splice bracket and flange splice plates (both of the full-width splice plates and the two half-width splice plates on one side of the tower strut web)
- Step 3: Raise tower struts into position
- Step 4: Connect strut flanges and web
- Step 5: Install remaining flange splice plates and remaining web splice bracket
- Step 6: Field weld web stiffeners on tower struts

### **Strut Installation Sequence: Transverse Direction (p. 10)**

- Step 1: Build tower shafts
- Step 2: Install flange splice plates (with the half-width plates on one side pushed inside the tower)
- Step 3: Raise tower struts into position
- Step 4: Connect strut flanges and web

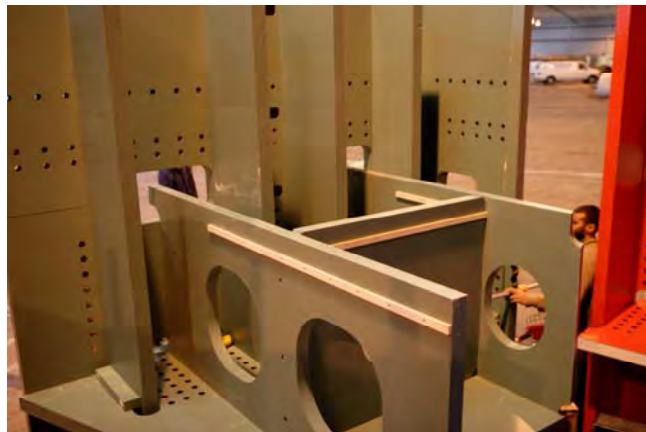
## San Francisco-Oakland Bay Bridge, Full Scale Mock-up of Tower Leg at Elevation 89.000



**Diaphragm Assembly (Skin Plate A)**  
Step 1: Assemble Walls



**Diaphragm Assembly (Skin Plate A)**  
Step 2: Install Bottom Diaphragm Plates



**Diaphragm Assembly (Skin Plate A)**  
Step 3: Install Web Plates



**Diaphragm Assembly (Skin Plate A)**  
Step 4: Install Top Diaphragm Plates

## San Francisco-Oakland Bay Bridge, Full Scale Mock-up of Tower Leg at Elevation 89.000



### Diaphragm Assembly (Skin Plate B)

Step 1: Assemble Walls

\* Hole in skin plate is not in contract plans and is solely for access to the completed model.

### Diaphragm Assembly (Skin Plate B)

Step 2: Install Bottom Diaphragm Plates



### Diaphragm Assembly (Skin Plate B)

Step 4: Install Top Diaphragm Plates

## San Francisco-Oakland Bay Bridge, Full Scale Mock-up of Tower Leg at Elevation 89.000



**Diaphragm Assembly (Skin Plate C)**  
Step 1: Assemble Walls



**Diaphragm Assembly (Skin Plate C)**  
Step 2: Install Bottom Diaphragm Plates



**Diaphragm Assembly (Skin Plate C)**  
Top Diaphragm Plate ready to install



**Diaphragm Assembly (Skin Plate C)**  
Step 4: Install Top Diaphragm Plates

**San Francisco-Oakland Bay Bridge, Full Scale Mock-up of Tower Leg at  
Elevation 89.000**



**Diaphragm Assembly (Skin Plate D)**  
Step 1: Assemble Walls



**Diaphragm Assembly (Skin Plate D)**  
Step 2: Install Bottom Diaphragm Plates



**Diaphragm Assembly (Skin Plate D)**  
Step 3: Install Web Plates



**Diaphragm Assembly (Skin Plate D)**  
Step 4: Install Top Diaphragm Plates

## San Francisco-Oakland Bay Bridge, Full Scale Mock-up of Tower Leg at Elevation 89.000



**Diaphragm Assembly (Skin Plate E)**  
Step 1: Assemble Walls



**Diaphragm Assembly (Skin Plate E)**  
Bottom diaphragm in place, installing web



**Diaphragm Assembly (Skin Plate E)**  
Step 4: Install Top Diaphragm Plates



**Diaphragm Assembly**  
Step 5: Assemble Tower Shaft Segment; Skin plate E connected to A and doubler plate installed  
\* Hole in skin plate is not in contract plans and is solely for access to the completed model.

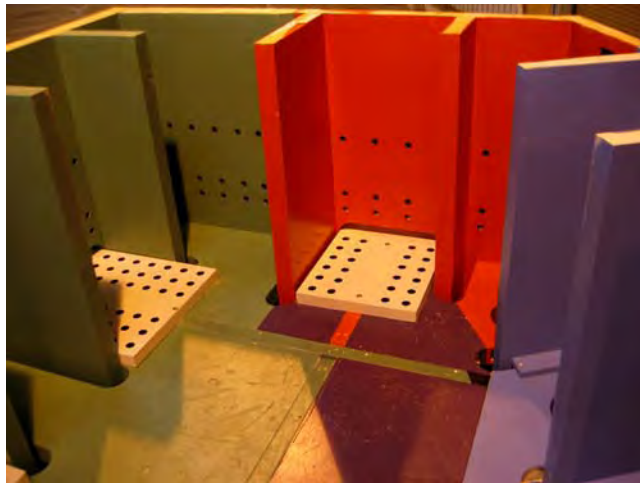
## San Francisco-Oakland Bay Bridge, Full Scale Mock-up of Tower Leg at Elevation 89.000



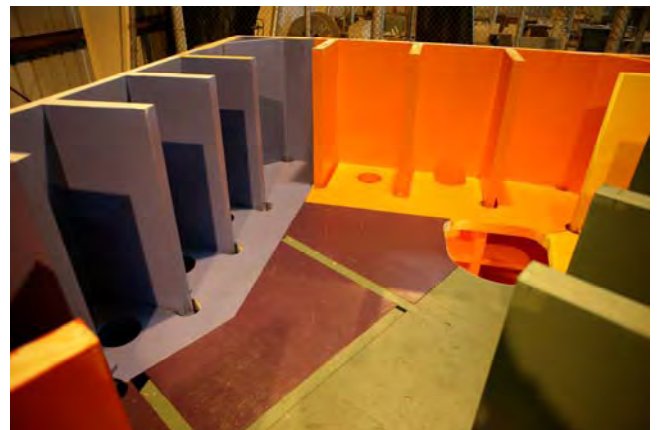
**Diaphragm Assembly**  
Step 5: Assemble Tower Shaft Segment  
Skin plate B connected to A



**Diaphragm Assembly**  
Step 5: Assemble Tower Shaft Segment  
All segments connected



**Diaphragm Assembly**  
Step 6: Completion of Top Diaphragm  
\* Note drop-in plates (in purple)



**Diaphragm Assembly**  
Step 6: Completion of Top Diaphragm  
\* Note drop-in plates (in purple)

## San Francisco-Oakland Bay Bridge, Full Scale Mock-up of Tower Leg at Elevation 89.000



**Installation of Tower Strut (Longitudinal)**  
Step 2: Install flange splice plates.



**Installation of Tower Strut (Longitudinal)**  
Step 4: Connect web plates to link beam



**Installation of Tower Strut (Longitudinal)**  
Step 6: Field weld web stiffener

## San Francisco-Oakland Bay Bridge, Full Scale Mock-up of Tower Leg at Elevation 89.000



### Installation of Tower Strut (Transverse)

Step 2: Install flange splice plates. Full-width splice plates are in the final position, but the half-width plates have been pushed inside the tower to simulate actual field construction conditions.



### Installation of Tower Strut (Transverse)

Step 3: Raise tower strut into position



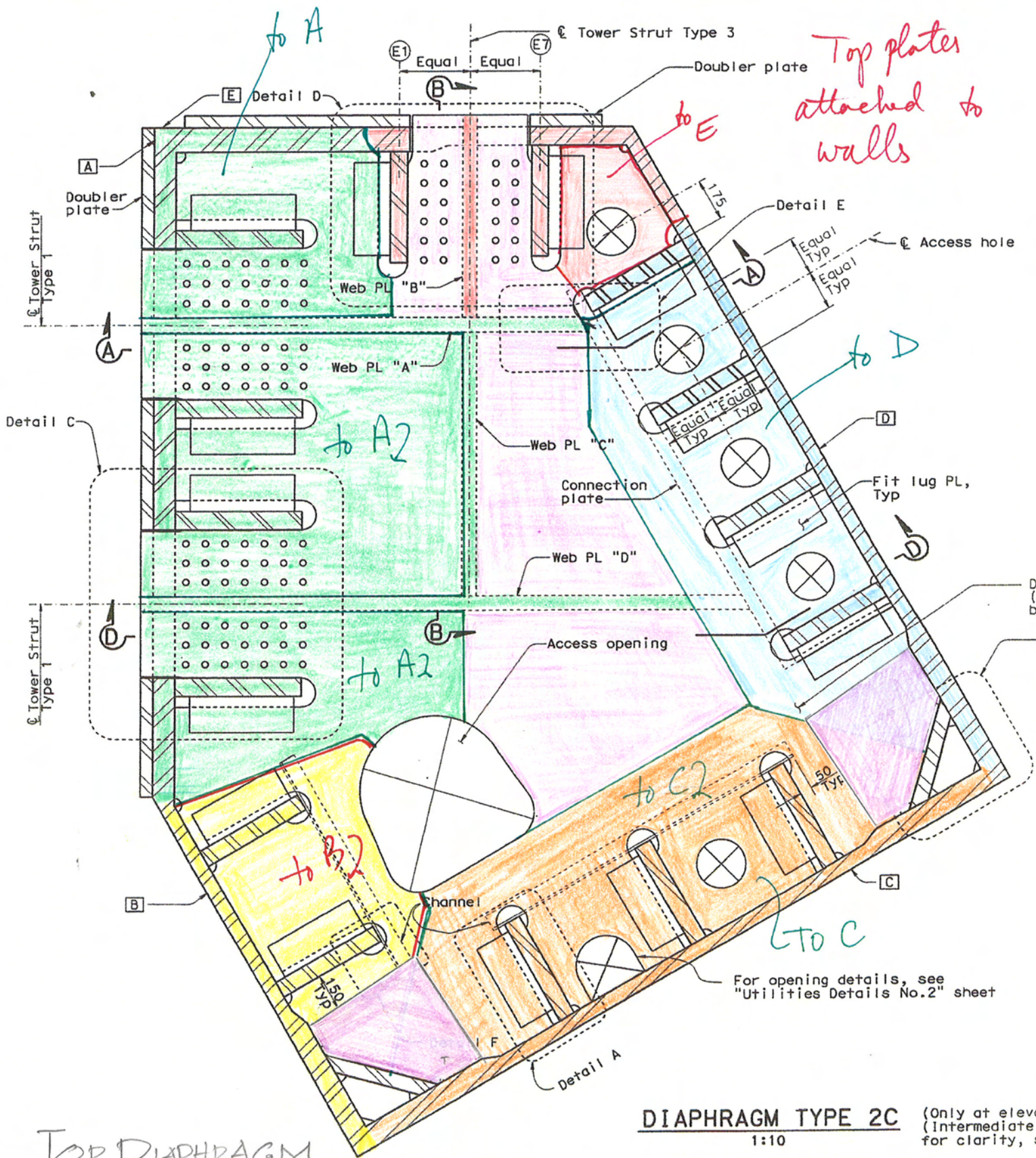
### Installation of Tower Strut (Transverse)

Step 4: Install web splice plates



### Installation of Tower Strut (Transverse)

Mock-up complete



TOP DIAPHRAGM

Y.L./W.L./F.C.

0.2001 Y. Liu

04

579

DESIGN

BY M. Nader

CHECKED M. Gulyas

DETAILS

BY L. Rus

CHECKED M. Gulyas

QUANTITIES

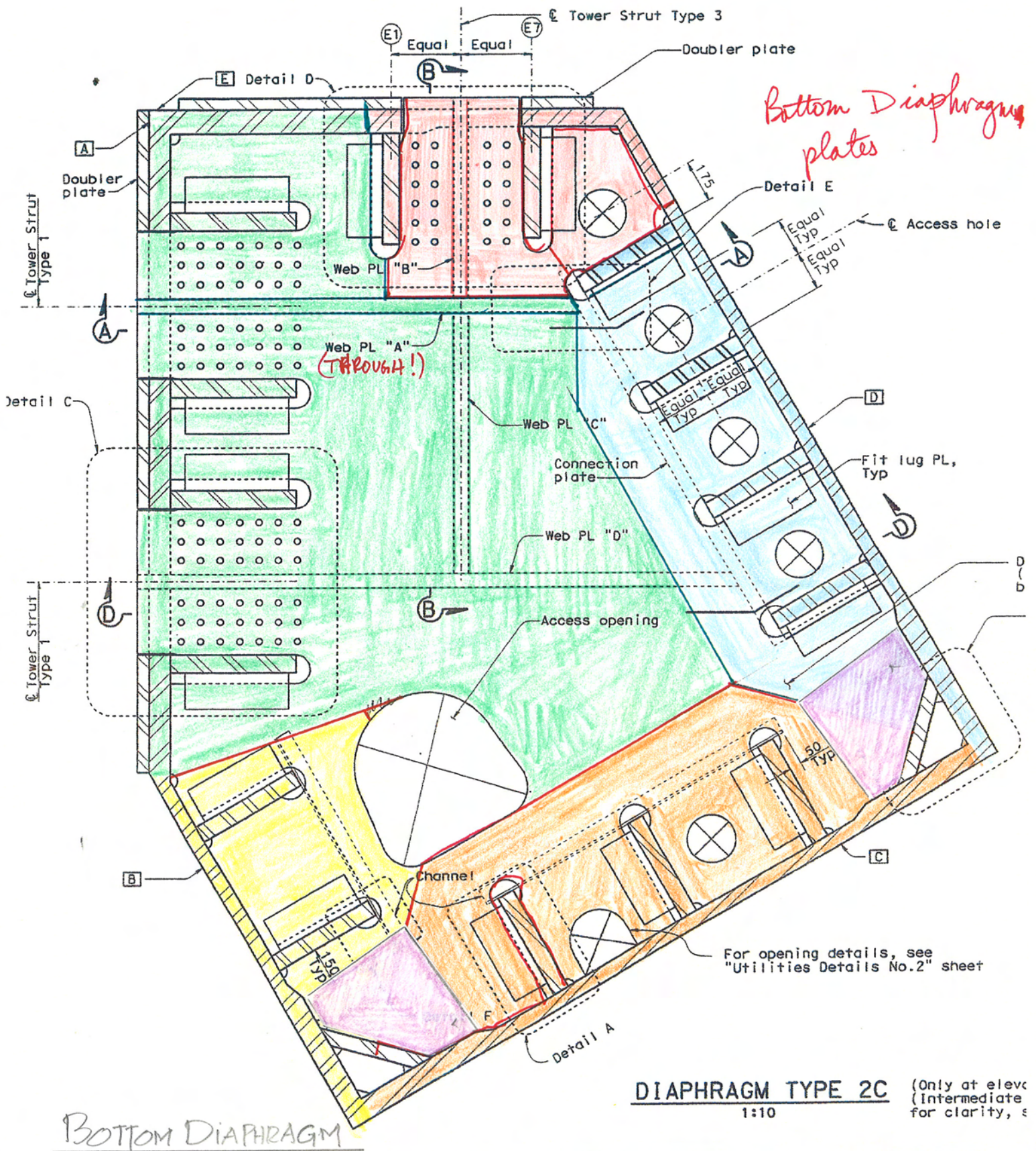
BY L. Rus

CHECKED Y. Zhang

PREPARED FOR  
STATE OF CALIF  
DEPARTMENT OF TRANS

ORIGINAL SCALE IN MILLIMETERS  
FOR REDUCED PLANS

0 10 20 30 40 50 60 70 80



J.L./W.L./F.C.  
J.L./Y.L.

579

DESIGN	BY	M. Nader	CHECKED	M. Gulyas
DETAILS	BY	L. Rus	CHECKED	M. Gulyas
QUANTITIES	BY	L. Rus	CHECKED	Y. Zhang

PREPARED FOR  
STATE OF CALIF  
DEPARTMENT OF TRANS

ORIGINAL SCALE IN MILLIMETERS  
FOR REDUCED PLANS